BACKGROUND INFORMATION FOR PUBLIC WORKSHOPS

MULTI-AGENCY ACTIVITIES IN SUPPORT OF CARSHARING APPLICATIONS

April 10 and 11, 2002

This package provides background information for consideration and discussion at the April 10 and 11, 2002 public workshops on multi-agency activities in support of carsharing applications. Information is provided in the following five areas:

I. Partnership Agreement

II. Project Inventory (Draft)

III. Application process for Transportation Systems ZEV credit (Draft)

IV. Information to be collected for project evaluation purposes (Draft)

V. Possible support activities (Draft)

The information provided herein is based on staff's initial review of the various topics and issues. It is intended to help organize the consideration of issues and stimulate discussion. This information does not represent a final staff position or staff recommendation.

Staff seeks comment on all of the attached material as well as on other related issues not specifically identified in the background material. Comment may be presented at the workshop or submitted separately. Comments should be directed to Mr. Chuck Shulock at California Air Resources Board, P.O. Box 2815, Sacramento, California 95812, or via email to cshulock@arb.ca.gov. Comments should be provided no later than April 21, 2002.

I. PARTNERSHIP AGREEMENT

The California Department of Transportation, California Air Resources Board, and California Energy Commission have executed a Partnership Agreement that commits the parties to work cooperatively on energy efficient and environmentally sound transportation improvements. The April 10 and 11 joint workshops are an outgrowth of this commitment. The text of the Partnership Agreement follows.

PARTNERSHIP AGREEMENT

CALIFORNIA DEPARTMENT OF TRANSPORTATION
CALIFORNIA AIR RESOURCES BOARD
CALIFORNIA ENERGY COMMISSION

Preamble

The California Department of Transportation (Department), the California Air Resources Board (ARB), and the California Energy Commission (CEC) (Parties) hereby establish a partnership to introduce environmentally sound and energy efficient transportation innovations that are intended to enhance mobility statewide. The Department's mission is to improve mobility across California; ARB seeks clean and healthful air for all Californians through the development, commercialization, and use of zero- and near-zero emission technologies; and the CEC's mission is to facilitate development and commercialization of energy efficient transportation technologies.

Purpose and Objective

The purpose of this Agreement is to pledge that the Parties will, to the greatest extent possible, use their staff and financial resources to work cooperatively on energy efficient and environmentally sound transportation improvements for California.

The objective is to ensure timely planning, implementation, and research of innovative transportation projects that facilitate modal integration, protect the State's environment, and promote energy efficiency.

Goals

? Identify and share information on innovative transportation, environmental, and energy priorities.
? Ensure the timely development of beneficial transportation projects that recognize the priorities of livable communities, enhanced modal integration, energy efficiency, and environmental protection.
? Work collaboratively to develop statewide projects with local or regional partners from either the public or private sector.
? Develop transportation, environmental, and energy performance criteria to evaluate innovative transportation projects.

Commitments

In a spirit of cooperation and collaboration, and with the mutual understanding that this should be a flexible working Agreement among Parties, the undersigned commit to the following:

? The Parties agree to establish working groups to develop and implement new initiatives;
? The Parties will commit staffing to coordinate and collaborate in support of initiatives such as shared-use vehicle transportation strategies linked to clean fuel vehicles via ARB's Zero Emission Vehicle mandate;
? The Parties will support the objective of this partnership in the form of technology transfer and guidance on new initiatives; and
? The Parties will work collaboratively to create innovative projects that integrate advanced transportation concepts, environmental protection, and energy efficiency.

Funding

No resources or funding is encumbered against this Agreement, which is terminable at will by any signatory party, and the Parties will cooperate in the execution of future agreements to implement these commitments when required.

(Signed) _____ _____
JEFF MORALES, Director Date
California Department of Transportation

(Signed) _____ _____
DR. ALAN LLOYD, Chairman Date
California Air Resources Board

(Signed) _____ _____
WILLIAM J. KEESE, Chairman Date
California Energy Commission

II. PROJECT INVENTORY (Draft)

This section provides a preliminary inventory of existing and planned carsharing projects in California. The purpose of this inventory is to assist interested parties in obtaining information on the scope and extent of carsharing activity in the United States.

U.S. Carsharing and Station Car Operations (March 2002)

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CARSHARING OPERATIONS

	Program Name and Location	Launch Date	Members	Business Model and Configuration	Vehicles/ Locations
	California (Programs Listed Alphabetically)				
1	**Anaheim Transportation Network Neighborhood (ATN) EV Community Program** (Anaheim, CA) www.atnetwork.org	2001-March 2002 (Ended 3/1/02)	58 members	ATN is a community partnership among area businesses, local organizations, and public agencies. The group is a non-profit transportation management association. ATN operated a neighborhood carsharing program for the City of Anaheim, employing 10 neighborhood electric vehicles from a total of 3 low- to moderate-income neighborhoods, until insurance coverage increased by 550% this year, and the program was terminated in March 2002. Users checked out vehicles for two hours at no charge.	10 vehicles 3 locations
2	**City CarShare** (Program Summary) www.citycarshare.org	2001	1400 members	City CarShare is a non-profit, focusing primarily on neighborhood carsharing, with a relatively rapid membership/vehicle growth rate. City Carshare is strategic about placing vehicles in locations accessible by transit. Many locations in San Francisco and Berkeley are within a few blocks of BART and Muni stations. Recently, City CarShare expanded into Oakland and Berkeley. In Fall 2001, City CarShare also started marketing to businesses.	40 vehicles 17 locations

	Program Name and Location	Launch Date	Members	Business Model and Configuration	Vehicles/ Locations
2a	**City CarShare** (East Bay, CA)	2002	100 members	City CarShare launched its East Bay operation in Oakland in December 2001, and the Berkeley operation in January 2002. The Oakland and Berkeley city councils have provided significant support and funding. Two vehicles are deployed in the parking garage of the Gaia building, an innovative mixed-use development. In this way, over 250 tenants have access to City Carshare vehicles deployed from the underground parking facility below their residence. City CarShare is seeking locations accessible by public transit. As the East Bay is less dense, vehicle "pods" will usually host only 1 vehicle. Vehicles will be distributed, so members can easily access them by walking.	4 vehicles 4 locations
2b	**City CarShare** (San Francisco, CA)	2001	1300 members	In San Francisco, City CarShare is working with transit agencies to place vehicles at transit stations and market their carsharing service. Vehicle locations (or "pods") can hold up to 5 vehicles.	36 vehicles 13 locations
3	**Clean Mobility Center** (Long Beach, CA) www.calstart.org	2002	Recruiting after April 19, 2002	A partnership among CALSTART, the Bikestation Coalition, and Flexcar has been formed to deploy the “Clean Mobility Center” (CMC). CMC subscribers will have access to a variety of vehicles for shared use. Valet bike parking, bike support services, and electronic bike lockers will facilitate overall service convenience. The vehicles will be stationed close to Metrorail and along the Long Beach Transit Route. The partnership will initially market to existing users of the bikestation and transit riders, and eventually outreach to local businesses.	Deploying 5 Th!nk City cars, 4-5 electric scooters, 4-5 electric bikes, and conventional bikes 1 location
	Calif. Summary 1 operating program 2 operational regions		1300 members		40 vehicles 17 locations

	Program Name and Location	Launch Date	Members	Business Model and Configuration	Vehicles/ Locations
Other National Locations (Programs Listed Alphabetically)					
4	**Boulder CarShare** (Boulder, CO) www.carshare.org	2001	30 members	Boulder CarShare is a non-profit, with 4 vehicles (1 electric vehicle), which operates a neighborhood carsharing program. The program is financed with member funding primarily, with some financial support from the City of Boulder.	4 vehicles 1 location
5	**Carsharing Traverse** (Traverse City, MI) www.carsharingtraverse.com	2000	30 members	Approximately 12 of the 30 members are not active users but rather "members in support." The operation has recently cut rates in half to encourage more recruitment (i.e., from $4/hr to $2/hr).	3 vehicles 3 locations
6	**Dancing Rabbit Vehicle Cooperative (DRVC)** (Rutledge, MO) www.dancingrabbit.org/drvc/	1998	15 members	DRVC is a small non-profit cooperative, based in a rural cohousing community. The vehicles run on biodiesel fuel. Members already share land and home ownership costs.	3 vehicles 1 location
7	**Flexcar** (Program Summary) www.flexcar.com	1999	4400 members	A commercial operation with a relatively rapid fleet and membership growth rate. All locations market to neighborhoods and businesses. At employment sites, Flexcar places vehicles on-site and manages vehicle use, providing employers with a monthly invoice for this service.	108 vehicles 85 locations
7a	**Flexcar Portland/ Vancouver**	1998		CarSharing Portland was the first commercial carsharing service launched in the U.S. in 1998. Flexcar acquired it in April 2001.	

	Program Name and Location	Launch Date	Members	Business Model and Configuration	Vehicles/ Locations
7b	**Flexcar Seattle**	1999		A commercial organization, with many vehicles and a rapid growth rate in neighborhoods. Flexcar's partnership with rental car companies, the University of Washington's transit service, and Amtrak, provides Flexcar members with discounts to these other transportation services.	
7c	**Flexcar Washington, D.C.**	2001		Flexcar was awarded a contract by Washington, D.C. Metro (Fall 2001) to operate a "hybrid" carsharing/station car program along Metro lines. Vehicles are available along Metro in D.C., Maryland, and Virginia.	
8	**I-GO-Car** (Chicago, IL) www.i-go-cars.org	2002	Recruiting as of March 2002	Created by the Community Energy Cooperative and the Center for Neighborhood Technology, I-GO's partners include the Chicago DOT, the Chicago Transit Authority, and the Chicago City Council. I-Go will focus on a neighborhood carsharing network, marketing primarily to households. The first 2 vehicles will be within walking distance of transit.	2 vehicles (initially)
9	**Roaring Fork Valley Vehicles** (Aspen, CO) www.roaringforkvehicles.com	2001	30 members (10 active members)	Roaring Forks Valley Vehicles is a non-profit, located in Aspen (population 6000). The community and local government is very supportive of the program. Approximately 3/4 of the members do not own cars. The service has recently lowered rates to attract more members. As a tourist town, the program also markets to seasonal employees.	1 vehicle 1 location

	Program Name and Location	Launch Date	Members	Business Model and Configuration	Vehicles/ Locations
10	**Zipcar** (Program Summary) www.zipcar.com	2000	2150 members	A commercial organization, with many vehicles/members and a rapid growth rate. Zipcar focuses primarily on neighborhood carsharing. The service offers a variety of business/corporate, individual, and household membership packages. Zipcar's philosophy is to place vehicles where people live and work, configuring carsharing locations (or networks), so that cars are within a 5-minute walk distance from each other.	96 vehicles 88 locations
10a	**Zipcar** **Boston**	2001	1725 members	The City of Boston has recognized carsharing as beneficial to the community and has proposed that redevelopment projects be required to provide a number of their spaces for carsharing, relative to the size of the development. Zipcar has been recognized among the development community. Indeed, 5 developers have expressed interest in voluntarily designating carsharing spaces in their planning. Recently, Zipcar began working with the Massachusetts Bay Transportation Authority (MBTA) to pilot 4 station-based vehicles at 4 transit stations. Via this pilot program, Zipcar plans to test the commuter-market for carsharing/station cars (or hybrid model). Zipcar reached a financial breakeven point in Boston after 14 months of operation.	67 vehicles 59 locations
10b	**Zipcar** **New York**	2002	125 members	With the exception of minor differences in the New York market, this service is very similar to that in D.C. and Boston.	10 vehicles 10 locations

	Program Name and Location	Launch Date	Members	Business Model and Configuration	Vehicles/ Locations
10c	**Zipcar Washington, D.C.**	2000	300 members	Zipcar vehicles are placed at or near transit stations. The majority of Zipcar D.C. members rely on transit for the majority of their trips. All vehicle locations are within a 1-minute walk of bus, subway, or light rail stations.	19 vehicles 19 locations
	National Summary 8 operating programs 13 operational regions		8055 members		255 vehicles 196 locations

STATION CAR OPERATIONS

	Program Name and Location	Launch Date	Members	Business Model and Configuration	Vehicles/ Locations
	California (Programs Listed Alphabetically**)**				
1	**Anaheim Transportation Network (ATN) Electric Vehicle Commuter Program** (Anaheim, CA) www.atnetwork.org	2000	18 members	ATN is a non-profit operating a workbased-commuter station car program for the City of Anaheim. Based out of 2 Metrolink stations, there are currently 18 members (peak membership was 28). Members use 7 available cars to carpool to a few work sites. At present, user fees only cover insurance costs.	8 vehicles 2 locations
2	**Hertz-BART Program** (Bay Area, CA)	2000	6 regular members & 25-30 "weekly" rental members	The Hertz-BART Program has been running from the Fremont Station since 2000. Hertz is responsible for most costs and operations and recently took steps to start a new operation at the Colma BART Station. At the Fremont Station, there are 6 regular subscribers that use the station cars for commuting to work. Occasionally, individuals use the vehicles to travel between the station and their homes. Each day, between 25 to 30 individuals are arriving at the station by the BART train, using the vehicles to travel to meetings. These individuals sign up for approximately one week of use, typically coming to region for work-related conferences or meetings.	6 to 36 vehicles, depending on demand 1 location (a second planned)
	CA Summary 2 operating programs 2 operational regions		24 members & 25-30 "weekly" rental members		14 to 44 vehicles 3 locations

	Program Name and Location	Launch Date	Members	Business Model and Configuration	Vehicles/ Locations
Other National Locations (Programs Listed Alphabetically)					
3	**NYPA/TH!NK Clean Commute Program** (NYC, NY) www.nypa.gov/ev	1995/ 2001	40 members	This non-profit, publicly operated program launched in Fall 2001. This program started as a demonstration in 1995 and reported 7 members and 5 vehicles in June 2001.	40 vehicles 7 locations
4	**Power Commute** (Morristown, NJ) www.transoptions.org	1997	20 members	Since 1997, a Transportation Management Association operates Power Commute. This program maintains a stable number of members. The vehicles are linked to transit, and approximately 2 to 3 members share each vehicle.	10 vehicles 1 location
	National Summary 4 operating programs 4 operational regions		84 members & 25-30 "weekly" rental members		64 to 94 vehicles 11 locations

PILOT RESEARCH PROGRAMS

	Program Name and Location	Launch Date	Members	Business Model and Configuration	Vehicles/ Locations
	California (Programs Listed Alphabetically)				
1	**CarLink II** (Palo Alto, CA) www.gocarlink.com	2001	~100 members	A public-private partnership among Honda, Caltrans, the University of California (UC), and Caltrain. Tests a commuter-based carsharing service linked to transit ('hybrid" model). Designed to evaluate economic viability of this model, effects on member travel behavior, and new carsharing technologies (developed by Honda). Project may be transitioned to a third-party operator.	20 vehicles 15 locations (distributed throughout corporate & neighborhood sites)
2	**Intellishare** (UC Riverside, CA) www.cert.ucr.edu/intellishare	1999	~350 members	Intellishare is a public private partnership between Honda and UC Riverside (UCR), established to evaluate carsharing at stations on or near the UC Riverside campus. Subscribers are UCR employees who use the vehicles for day trips on and around the campus. Intellishare deploys smart technologies to monitor and facilitate vehicle use.	30 vehicles 3 locations
3	**ZEV-NET (Zero Emission Vehicle-Network Enabled Transport)** (UC Irvine, CA) www.zevnet.org (under construction)	2002 (Plan to announce next phase in April 2002)	10 Corporate members, over 100 drivers	ZEV-NET is a public-private partnership among Toyota, Nissan, UC Irvine (and affiliated transportation institutes), the City of Irvine, Orange County Transportation Agency, and UC Riverside. The venture includes a research component to develop and deploy a station-car infrastructure coordinated by information technologies. ZEV-NET will establish a "hybrid" model that serves the commuting public and corporate business sector.	50 vehicles 2 locations
	CA Summary 3 operating programs 3 operational regions		~550 members		100 vehicles 20 locations

PLANNED OPERATIONS	
	Strong interest in carsharing and station cars is continuing in other U.S. cities. In 2002, additional efforts are planned in Atlant Angeles, Sacramento, and San Francisco (Presidio), California; Corvallis, Oregon; Denver, Colorado; Silver Spring, Marylar Pennsylvania; and Madison, Wisconsin.

III. APPLICATION PROCESS FOR OBTAINING ZEV CREDIT FOR TRANSPORTATION SYSTEMS PROGRAMS (DRAFT)

This section provides background information regarding the application process for obtaining ZEV credit for transportation systems programs. The materials include (1) the text of the relevant proposed regulatory language, (2) a draft outline of the information to be included in an application for ZEV credit, (3) a draft listing of minimum requirements that a project must meet in order to be awarded ZEV credit, and (4) a listing of various issues for further discussion.

In preparing these materials, staff recognizes that the technology and management systems to support carsharing applications are in a developmental phase and are evolving rapidly. Therefore it would be inappropriate to impose detailed specific requirements that would not accommodate innovation and technical progress. On the other hand, staff also recognizes the need to ensure that projects receiving additional ZEV credit advance the technology and build towards more widespread implementation. Staff has attempted to strike a balance that sets forth basic information needs but does not overly prescribe the possible approaches. Staff seeks comment on this trade-off as well as on the specific elements included.

1. Proposed regulatory language

Proposed section 1962(g)(5) of Title 13 of the California Code of Regulations reads as follows:

(5) *ZEV Credits for Transportation Systems.*

(A) *General.* In model years 2001 through 2007, a ZEV, advanced technology PZEV or PZEV placed as part of a transportation system may earn additional ZEV credits, which may used in the same manner as other credits earned by vehicles of that category, except as provided in section (g)(5)(C) below. A NEV is not eligible to earn credit for transportation systems. To earn such credits, the manufacturer must demonstrate to the reasonable satisfaction of the Executive Officer that the vehicle will be used as a part of a project that uses an innovative transportation system.

(B) *Credits Earned.* In order to earn additional credit under this section (g)(5), a project must at a minimum demonstrate [i] shared use of ZEVs, AT PZEVs or PZEVs, and [ii] the application of "intelligent" new technologies such as reservation management, card systems, depot management, location management, charge billing and real-time wireless information systems. If, in addition to factors [i] and [ii] above, a project also features linkage to transit, the project may receive further additional credit. For ZEVs only, not including NEVs, a project that features linkage to transit, such as dedicated parking and charging facilities at transit stations, but does not demonstrate shared use or the application of intelligent new technologies, may also receive

additional credit for linkage to transit. The maximum credit awarded per vehicle shall be determined by the Executive Officer, based upon an application submitted by the manufacturer and, if appropriate, the project manager. The maximum credit awarded shall not exceed the following:

Type of Vehicle	*Shared Use, Intelligence*	*Linkage to Transit*
PZEV	2	1
Advanced Technology PZEV	4	2
ZEV	6	3

(C) *Cap on Use of Credits.*

1. *ZEVs*. Credits earned or allocated by ZEVs pursuant to this section (g)(5), including all credits earned by the vehicle itself, may be used to satisfy up to one-tenth of a manufacturer's ZEV obligation in any given model year.

2. *AT PZEVs*. Credits earned or allocated by AT PZEVs pursuant to this section (g)(5), including all credits earned by the vehicle itself, may be used to satisfy up to one-twentieth of a manufacturer's ZEV obligation in any given model year, but may only be used in the same manner as other credits earned by vehicles of that category.

3. *PZEVs*. Credits earned or allocated by PZEVs pursuant to this section (g)(5), including all credits earned by the vehicle itself, may be used to satisfy up to one-fiftieth of the manufacturer's ZEV obligation in any given model year, but may only be used in the same manner as other credits earned by vehicles of that category.

(D) *Allocation of Credits.* Credits shall be assigned by the Executive Officer to the project manager or, in the absence of a separate project manager, to the vehicle manufacturers upon demonstration that a vehicle has been placed in a project. Credits shall be allocated to vehicle manufacturers by the Executive Officer in accordance with a recommendation submitted in writing by the project manager and signed by all manufacturers participating in the project, and need not be allocated in direct proportion to the number of vehicles placed.

2. Information to be included in project application (draft)

This section outlines the elements to be included in an application for Transportation Systems ZEV credit.

A. Project Overview
   1. General description
   2. Project manager, with contact information
   3. Other participants and roles, with contact information
   4. Schedule
      a. Rollout
      b. Planned expansion
      c. Duration

B. Project Configuration
   1. Number of sites
   2. Location of sites
   3. Infrastructure
   4. Linkage to transit
      a. Physical
      b. Operational

C. Participating Vehicles
   1. Make, model, model year
   2. Certification status (ZEV, AT PZEV, PZEV)
   3. Number

D. Requested transportation systems credit
   1. Amount
   2. Justification
   3. Allocation to project participants

E. Customers
   1. Target market
   2. Categories
   3. Eligibility criteria

F. Revenue model
   1. Funding sources
   2. Customer rates/packages
   3. Other funding
   4. Revenues vs. costs

G. Anticipated usage
    1. Number of customers
    2. Number of trips
    3. VMT

H. Reporting
    1. Customer pre-project baseline
    2. Number of customers
    3. Number of trips, per vehicle per day
    4. VMT

I. Information technology/management system
    1. General description—features and capabilities
    2. Reservation management
    3. Vehicle access management
    4. Vehicle location management
    5. In-vehicle communications
    6. Business administration
        a. Billing
        b. Database management

J. Program outreach and communication
    1. Outreach strategy
    2. Target audiences
    3. Outreach methods

3. <u>Minimum requirements (draft)</u>

In order to receive transportation system ZEV credit, projects must at a minimum exhibit the following characteristics:

A. Carsharing or multiple use of vehicles
B. Automated (on-line or telephone) reservation system
C. Automated vehicle tracking to ensure vehicle availability
D. Electronic vehicle access control
E. Minimum of 10 ZEV program (ZEV, AT PZEV, PZEV) vehicles
F. Pre-subscribed customer base (membership)
G. User data collection and reporting mechanism
H. Automated billing process

(Note: Requirements A through D above do not apply to ZEV-based projects that feature linkage to transit, such as dedicated parking and charging facilities at transit stations, but do not demonstrate carsharing/multiple vehicle use or the application of intelligent new technologies. See proposed regulatory language, subsection (5)(B)).

In order to receive credit for “linkage to transit”, projects must at a minimum exhibit the following characteristics:

A. Direct access to a railway mass transit system.
B. Dedicated on-site or adjacent parking at the transit station.
C. For ZEVs, dedicated infrastructure at or adjacent to the transit station unless the applicant demonstrates that such dedicated infrastructure is not necessary to meet the duty cycle of the vehicle.

4. Discussion Issues:

A. Release of credits. At what point should credits be made available to project participants (upon approval of application, upon start of system service, upon achievement of some level of ongoing operation)?

B. Length of service. What is the minimum project duration that is needed in order to qualify for credit?

C. Early termination. What happens if a project ceases operation prior to its planned duration?

E. Confidentiality. Should any of the information supplied on the application or reported by projects during implementation (e.g. financial or usage information) be treated as confidential?

IV. INFORMATION TO BE COLLECTED FOR CARSHARING AND STATION CAR PROJECT EVALUATION PURPOSES (DRAFT)

As is noted in the regulatory text, ZEV credit for vehicles placed in transportation systems (primarily carsharing and station car systems) is only available for placements through the 2007 model year. This approach was adopted to force a review of the effectiveness of such projects in achieving air pollution reductions through reducing vehicle trips and vehicle miles traveled (VMT) and by increasing cleaner vehicle trips.

Staff anticipates that prior to the 2008 sunset date of this portion of the regulation, the Board will consider the air quality results of the programs to date and determine if it is appropriate to continue to offer additional ZEV credits for such placements. To prepare for such an evaluation, it is necessary to define in advance methodologies for the information/data to be collected. This section outlines staff's current thinking on how such an evaluation effort would be structured.

Data Collection Requirements for Carsharing and Station Car Programs (Draft)

Data collection requirements for projects receiving transportation system ZEV credits are proposed to include the following:

- Participant questionnaires
- Participant/vehicle trip totals
- Data transmittal to ARB

The data collected will be used to estimate the emission reduction benefits from carsharing and station car commute-related vehicle trip and VMT reduction and the number of cleaner vehicle trips. (Data collection on non-commute transit trips and household vehicle ownership is also proposed.)

This draft proposal seeks to minimize the data collection and reporting burden on project participants. For example, staff believes that the analysis of household vehicle travel and non-commute trip impacts, which requires detailed trip diaries and household travel surveys, is too expensive and burdensome to require for transportation system operators. Analysis of the impact of carsharing and station cars on household vehicle travel behavior and non-commute vehicle travel should be assessed through more detailed studies of programs conducted separate from this process.

<u>Participant questionnaires</u>

Trip and VMT reduction attributable to carsharing and station cars must be verified by actual behavioral change from a single-occupancy vehicle to an alternate mode of transportation (transit, carpooling, biking, etc.). Identifying each participant's travel behavior prior to and after joining a carsharing/station car program is the key to accurately assessing vehicle travel impacts, including related modal shifts, and relative "value" of ZEV credits awarded to automakers for participating in such programs.

Proposed requirements:

? "Before" questionnaire conducted as a coinciding action of participant joining a carsharing/station car program.
? "After" questionnaire conducted approximately six months after participant joins the program. Follow-up questionnaires would be required once per year per participant.

? ARB will develop survey questions (for purposes of data consistency). Questionnaire variations to better match a particular carsharing or station car model would be permitted subject to ARB staff approval.

? Questionnaires would assess the following:
  - Commute mode
  - Commute distance
  - Access trip mode (e.g., driving to the train station)
  - Access trip distance
  - Non-commute transit trips
  - Average commute vehicle fleet and household vehicle fleet of system participants

Draft questionnaire contents are attached.

<u>Participant/vehicle trip totals</u>

To assess the number of "cleaner" trips in ZEVs, PZEVs, and ATPZEVs, it is important to assess the vehicle trips and miles traveled for each of these vehicle categories in a carsharing/station car system.

Proposed data requirements:

? Number of participants.
? Number of vehicles per category (ZEV, PZEV, ATPZEV) – make, model and year. (Data on non-ZEV categories would also be collected.)
? Number of annual participant uses/trips per vehicle category.*
? Average annual mileage per vehicle category. (Estimate and deduct non-carsharing/station car system use, if any.)

* To minimize costs, this staff proposal does not require vehicle instrumentation that counts vehicle starts, or detailed diaries that log every trip. We do propose, however, to require tracking and reporting of the number of participant uses. Most existing systems track and bill by participant/vehicle use (e.g., time and distance of use), so this accounting should be possible within existing resources.

Data transmittal to ARB

It is recommended that programs send to ARB the raw questionnaire data (hard copy questionnaires or electronic data files), clearly marked by participant number. This will provide for uniform data entry and afford ARB staff a better opportunity to learn from the data collection process.

To accurately assess the impact of carsharing and station car programs the baseline (before) data and ongoing (after) data should be a one-to-one match with the participants. It is therefore important that each participant is given an identification number and that the I.D. number is clearly visible on each questionnaire and any accompanying data files. (Questionnaires should state that a participant's identity will not be revealed, and that all data will be aggregated.)

It is proposed that each carshare/station car program be given an identification number (e.g., 101), that each program assign an identification number to each participant (e.g., 101-1), and that each participant's questionnaire include the appropriate identification number. (All programs will likely have "smart" ID codes for participants; this requirement ensures that these codes will be data-collection friendly.)

Data Analysis

Trip and VMT reduction

- A baseline number of weekly commute trips per participant determined from the "Before" questionnaire data would be compared to the weekly commute trips per participant from the "After" questionnaire data to calculate number of commute trips reduced. Trips reduced would be multiplied by average commute trip lengths (obtained from questionnaire data) to calculate average VMT reduction per program and system-wide.

- Additional trip and VMT reduction benefits from non-commute transit trips would be estimated by comparing "Before" and "After" non-commute questionnaire results.

- Average access trips to carsharing or station car lots (e.g., driving to the carshare or station car vehicle), as well as access trips to alternate modes of transportation (e.g., driving to train station) and corresponding VMT would be calculated and deducted from the total average commute trip and VMT reduction benefits.

- Trip (engine start) and VMT (per mile) emission factors would be applied to the trip and VMT reductions to determine emission reductions. (Emission factors would be developed from the commute vehicle data supplied from the surveys, or average vehicle fleet emissions factors could be used.)

Cleaner vehicle trips

The number of vehicle uses per vehicle category (ZEV, PZEV, ATPZEV, non-ZEV) would be calculated from the data reported by each carsharing/station car project. Miles per vehicle use (per category) would be calculated by dividing the total mileage per vehicle category by the number of uses per vehicle category.

Average participant fleet emission factors would be developed from the commute vehicle data collected. (Average statewide vehicle emission factors could also be used.)

Estimated emission reductions from "cleaner vehicle trips" would be the difference between the participants' vehicle fleet emissions and the emissions from the cleaner carsharing and station car vehicles. (This method assumes that every carsharing/station car trip would have otherwise been made by the participant in their personal vehicle and that the participants' vehicle fleet would not have changed if carsharing/station cars were not an option. Appropriate correction factors for uncertainty should be applied.)

Long-term impacts of household vehicle ownership

Studies of household vehicle travel have shown a distinct relationship between the number of vehicles per household and the amount of vehicle travel. If average household vehicle ownership of carsharing/station car participants does indeed decrease over time, assumptions regarding reduced household VMT may be applied based on existing research.

Draft Questionnaire Contents

1. Please indicate the number of days *last week* you commuted to work using any of the listed modes.
   (For instance, you may have driven by yourself 4 days and carpooled 1 day.)

Travel Mode	How many **days last week** did you travel to work by this mode?
Drove by Myself	
Bus	
Train	
Carpool	
Vanpool	
Bicycle	
Walk	
Worked at Home	
Other (please specify)	

Note: Asking for actual, versus general, travel behavior is preferred by most travel survey experts.

2. Please estimate the distance from your home to work _____ miles

3. For any of the travel modes you selected other than "Drive by Myself" and "Work at Home", do you usually drive alone to your commute stop? *(E.g., Do you usually drive alone to the vanpool pickup spot or the train station?)* Yes ? No ?

   3a. If you answered "Yes" to Question 3, please estimate the distance you drive from your home to your commute stop. _____ miles

4. If you drove alone during your commute last week, what is the make, model and year of the vehicle you drove the most days?

   Make _____ Model _____ Year _____

5. Did you use public transit *last week* for any purpose other than commuting? Yes ? No ?

5a. If you answered “Yes” to Question 5, how many non-commute public transit trips did you take last week? _____ non-commute transit trips per week

5b. For each transit trip, please indicate how you would have traveled if you hadn’t taken transit. Total should equal the number in 5a. (Example: Joe took three non-commute transit trips last week. For two of them he would have driven by himself, and for one of them would not have taken the trip.)

__ driven by myself __ carpooled __ biked or walked __ taxi __ not taken the trip

6. How many operational motor vehicles (including cars, trucks, minivans, SUVs, motorcycles) does your household own or lease? _____ vehicles

6a. Please provide the make, model and year of these vehicles.

Make _____ Model _____ Year _____
Make _____ Model _____ Year _____
Make _____ Model _____ Year _____
Make _____ Model _____ Year _____
Make _____ Model _____ Year _____
Make _____ Model _____ Year _____

Under consideration: A question to help determine what portion of carshare and station car uses are adding versus replacing vehicle trips.

V. Possible Support Activities (Draft)

This section outlines possible support activities that could be undertaken by staff to encourage the development and success of carsharing projects.

1. Standardization.

By "standardization", staff means the use of a common user interface and/or communication protocol that would allow interoperability among carsharing projects statewide (e.g. same key fob or smart card). Staff is interested in comment on the following questions:

- Is this an appropriate conceptual definition of standardization?
- Should standardization be pursued as an objective? Why or why not? If so, by what means?

2. Clearinghouse.

Staff is considering the development and maintenance of an information resource for the assistance of interested parties. This could include descriptive information on projects, potential partners/locations, possible funding sources, information regarding "best practices" (lessons learned), and links to additional resources. Staff seeks comment as to whether such a clearinghouse would be useful, and if so what types of information should be assembled.

3. Project development/implementation/selection

At the moment there are a number of possible sites for carsharing projects and possible project participants. Should the state play a role in helping to facilitate development of specific projects? If so, in what manner?

4. Investigation of possible funding sources

A number of potential funding sources, both governmental and non-governmental, have been identified that could perhaps be targeted to support carsharing projects. Staff is considering reviewing various possible sources and evaluating their applicability. Staff seeks comment as to whether this would be a useful effort, and if so what potential sources of funding should be investigated.

5. Monitoring/feedback

Staff could participate in an annual or biennial review that would provide monitoring/feedback on project progress to date. This feedback could be helpful to programs throughout the state in building on experience form the field. The ARB, Caltrans and the Energy Commission could support such feedback by

sponsoring an annual workshop or conference of state carsharing/station car project participants.

6. Other

Are there other similar support activities that should be pursued? For example, staff has received information regarding difficulties in obtaining and retaining insurance coverage. Are there activities that the state could undertake that would assist projects in this regard?